Claims

1. (currently amended) A chimeric empty capsid of the infectious bursal disease virus (IBDV), ~~characterized in that it is constituted~~ produced by assembly of a plurality of (i) IBDV pVP2 proteins and (ii) fusion proteins comprising a region A comprising an ~~constituted by the~~ IBDV VP3 protein and ~~bound to~~ a region B comprising ~~constituted by~~ a heterologous polypeptide ~~comprising a polypeptide of interest~~.

2. (currently amended) The chimeric empty capsid of ~~Capsid according to~~ claim 1, wherein said region B is bound to the amino-terminal region of IBDV VP3[[,]] or ~~alternatively~~ to the carboxy-terminal region of IBDV VP3.

3. (currently amended) The chimeric empty capsid of ~~Capsid according to~~ claim 1, wherein said polypeptide of interest is a polypeptide useful in vaccination, therapy or diagnosis.

4. (currently amended) The chimeric empty capsid of ~~Capsid according to~~ claim 1, wherein said region B comprises a single polypeptide of interest.

5. (currently amended) The chimeric empty capsid of ~~Capsid according to~~ claim 1, wherein said region B comprises two or more polypeptides of interest.

6. (currently amended) The chimeric empty capsid of ~~Capsid according to~~ claim 1, wherein said fusion protein comprises a region A bound to a single region B.

7. (currently amended) The chimeric empty capsid of ~~Capsid according to~~ claim 1, wherein said fusion protein comprises a region A bound to a first region B and a second region B~~two regions B~~, which first and second regions B are the same ~~equal~~ or different, wherein the first region B is ~~one of them~~ bound to the amino-terminal region of the VP3 of ~~present in~~ region A[[,]] and the second region B is bound ~~other one~~ to the carboxy-terminal region of the VP3 of ~~present in~~ region A.

8. (currently amended) The chimeric empty capsid of ~~Capsid according to~~ claim 7, wherein said first and second regions B contain a plurality of heterologous ~~more than one~~

polypeptides, which heterologous polypeptides are the same ~~of interest equal to~~ or different ~~from one another~~.

9. (currently amended) The chimeric empty capsid of ~~Capsid according to~~ claim 1, wherein said fusion protein further comprises[[,]] a linker ~~polypeptide~~ located between said regions A and B.

10. (currently amended) A nucleic acid~~, said nucleic acid having~~ comprising a nucleotide sequence ~~which comprises the nucleotide sequence encoding for~~ that encodes the fusion protein ~~defined in anyone~~ of claim[[s]] 1 ~~to 9~~.

11. (currently amended) The nucleic acid of claim 10,~~A nucleic acid, said nucleic acid having a nucleotide sequence which comprises (i) a nucleotide sequence comprising the open reading frame corresponding to the IBDV VP3 protein and (ii) a nucleotide sequence comprising the open reading frame of one or more heterologous polypeptides comprising one or more polypeptides of interest~~ wherein in the resulting fusion protein said heterologous polypeptide is bound to the amino-terminal region of IBDV VP3.

12. (currently amended) The nucleic acid of ~~Nucleic acid according to~~ claim 11, further comprising (iii) a nucleotide sequence comprising an ~~the~~ open reading frame corresponding to the IBDV pVP2 protein.

13. (currently amended) A gene construct comprising the ~~a~~ nucleic acid of ~~according to~~ claim 10 ~~or 11~~.

14. (currently amended) A gene construct comprising the ~~a~~ nucleic acid of ~~according to~~ claim 12.

15. (currently amended) An expression system ~~selected from:~~

~~a) an expression system~~ comprising the ~~a first~~ gene construct of ~~according to~~ claim 13[[,]] operatively bound to a transcription~~, and optionally translation,~~ control element[[s]]~~, and a second gene construct[[,]] operatively bound to transcription, and optionally translation, control~~

~~elements; said second gene construct comprising a nucleotide sequence comprising the open reading frame corresponding to the IBDV pVP2 protein; and~~

~~b) an expression system comprising a gene construct according to claim 14, operatively bound to transcription, and optionally translation, control elements~~.

16. (currently amended) The expression system of ~~Expression system according to~~ claim 15, wherein said expression system is a ~~being selected from~~ plasmid[[s]], a bacmid[[s]], a yeast artificial chromosome[[s]] (YAC[[s]]), a bacteria artificial chromosome[[s]] (BAC[[s]]), a bacteriophage P1-based artificial chromosome[[s]] (PAC[[s]]), a cosmid[[s]], or a virus[[es]]~~,~~ ~~which optionally contain a heterologous replication origin~~.

17. (currently amended) A host cell comprising the ~~containing a~~ nucleic acid ~~according to anyone~~ of claim[[s]] 10 ~~to 12, or a gene construct according to anyon of claims 13 or 14, or an expression system according to anyone of claims 15 or 16~~.

18. (canceled)

19. (currently amended) The host cell of ~~Host cell according to~~ claim 17 ~~or 18~~, said cell being selected from a mammal cell, an avian cell, an insect cell and a yeast.

20. (currently amended) A method for producing ~~process for the production of~~ chimeric empty capsids of the infectious bursal disease virus (IBDV) ~~according to anyone of claims 1 to 9,~~ comprising culturing a host cell ~~according to anyone of claims 17 to 19, and, if desired, recovering said chimeric empty IBDV capsids~~ comprising the nucleic acid of claim 10.

21. (currently amended) The method of ~~Process according to~~ claim 20, wherein said host cell is an insect cell and wherein the nucleic acid is a recombinant baculovirus.~~, comprising the steps of:~~

~~a) preparing an expression system selected from (I) and (II), wherein:~~

~~expression system (I) is constituted by a recombinant baculovirus containing a gene construct according to claim 14; and~~

~~expression system (II) is constituted by a first recombinant baculovirus containing a gene construct encoding for the IBDV pVP2 protein, and a second recombinant baculovirus containing a gene construct according to claim 13;~~

~~b) infecting insect cells with said expression system prepared in step a);~~

~~c) culturing the infected insect cells obtained in step b) under conditions allowing the expression of recombinant proteins and their assembly to form chimeric empty IBDV capsids; and~~

~~d) if desired, isolating and optionally purifying the chimeric empty IBDV capsids.~~

22. (currently amended) The method of ~~Process according to~~ claim 20, wherein said host cell is a yeast and wherein the nucleic acid is a plasmid., ~~comprising the steps of:~~

~~a) preparing an expression system constituted by a plasmid containing a gene construct according to claim 14;~~

~~b) transforming yeast cells with said expression system prepared in step a);~~

~~c) culturing the transformed yeasts obtained in step b) under conditions allowing the expression of recombinant proteins and their assembly to form chimeric empty IBDV capsids; and~~

~~d) if desired, isolating and optionally purifying the chimeric empty IBDV capsids.~~

23. (canceled)

24. (currently amended) A medicament comprising the ~~The use of~~ chimeric empty capsids of the infectious bursal disease virus (IBDV) ~~according to anyone~~ of claim[[s]] 1 ~~to 9 in the manufacture of a medicament~~.

25. (currently amended) The medicament of claim 24~~Use according to claim 24~~, wherein said medicament is a vaccine.

26. (currently amended) The medicament of claim 24~~Use according to claim 24~~, wherein said medicament is a gene therapy vector.

27. (currently amended) A vaccine comprising a therapeutically effective amount of the chimeric empty capsids of the infectious bursal disease virus (IBDV) ~~according to anyone~~ of claim[[s]] 1~~ to 9, optionally together with~~ and one or more pharmaceutically acceptable adjuvants~~ and/or vehicles~~.

28. (currently amended) The vaccine of ~~A vaccine according to~~ claim 27, wherein the vaccine ~~useful to~~ simultaneously protects at least one of an animals~~ or~~ and a human[[s]] against infection caused by two or more disease-causing infectious agents.

29. (currently amended) A gene therapy vector comprising the ~~a~~ chimeric empty capsid of the infectious bursal disease virus (IBDV) ~~according to anyone~~ of claim[[s]] 1~~ to 98~~.

30. (new) The expression system of claim 15, further comprising a second gene construct operatively bound to a transcription control element, said second gene construct comprising a nucleotide sequence comprising an open reading frame corresponding to the IBDV pVP2 protein.

31. (new) An expression system comprising the gene construct of claim 14 operatively bound to a transcription control element.

32. (new) The method of claim 20, further comprising recovering said chimeric empty IBDV capsids.